

MODULE 5: SETTING TARGETS AND MEASURING SUCCESS

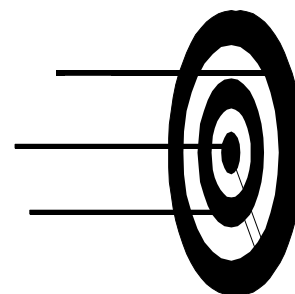
For each objective you set for your significant environmental aspects in Module 3, you will set a corresponding target. A target is a detailed performance requirement. Using the Module 4 press cleaning example, assume that the alternatives evaluation showed that the Company could reduce air and water releases both in the plant and at the laundry by substituting Product B, and that this shows an acceptable level of performance and cost. The environmental target then could be stated as follows:

Reduce air releases of regulated chemicals in press cleaner by 80% in the plant, and reduce the volume of regulated chemicals on used wipers by 40% by the end of a 12-month period through product B substitution and improvements in work practices.

The evaluation showed you what is possible in terms of reducing air and water releases, and also showed you the best means to accomplish that objective. When you frame your target consider how you will measure the results. You will need to establish ways of measuring your progress in meeting the targets, in order to both evaluate your process and document success. Time frame is also important. How long will it take you to implement the program, which includes training people, acquiring new product, phasing out old product, acquiring equipment, defining new work procedures for several steps of the production process, and establishing operational controls for changed processes?

Measuring Results

Some say that “an EMS without an effective monitoring and measurement program is like driving at night without the



Tip

State your target in terms of the environmental improvement to be achieved, rather than the means of achieving it. For example, “reduce air releases of X” rather than “substitute X.” The desired improvement may continue for a long time, but the means may change with circumstances.

Tip

Be sure to consider what operational controls may be needed for any new processes. Refer to Module 6 for help.

headlights on – you know that you are moving but you can't tell where you are going!"⁵

For each target, identify a measurement for success, e.g. volume of waste or energy used or percent of cartridges recycled (see Worksheet 5-1). These measurements, also called performance indicators, should be:

- ▶ simple and understandable,
- ▶ objective,
- ▶ verifiable,
- ▶ linked to production, and
- ▶ relevant to your objectives.

Below are some sample performance indicators:

- ▶ tons of SO₂ released per unit of electricity produced,
- ▶ pounds of hazardous substance "X" emitted per unit of product, or per dollars of sales, and
- ▶ percentage reduction in the discharge of a material in a given year versus that in a base year.

Measure changes in the aspect (e.g., reduced waste) with respect to production or sales rather than by itself in order to evaluate environmental improvement. Changes in the aspect can be caused by changes in the sales volume with no real environmental improvement. Each measure should be an indicator of where problems may be occurring in the process. Worksheet 5-1 is designed to assist you in tracking your measurement indicators.

Tip

Measuring and evaluating environmental performance is an ongoing process.

⁵Environmental Management System: *An Implementation Guide for Small and Medium-Sized Organizations*, NSF International, Ann Arbor, Michigan, November 1996, p. 49.

Worksheet 5-1: Environmental Performance Measurement Indicators

Aspect	Objective	Indicator	Date Checked	Who Checked	Result	Corrective Action
Waste Toner Cartridge	Recycle cartridges	Number bought / number recycled	monthly	Office manager	1 missing	Discuss problem with copier maintenance person
Contact Person:				Date Completed:		

In the toner cartridge example, the performance indicators might be the number of toner cartridges used and the number sent for recycling. In the case of the air emissions from the press cleaning, measurements could include:

- ▶ amount of press cleaner used per 1,000 images printed,
- ▶ amount of press cleaner saved over a selected time period,
- ▶ amount of press cleaner used at each press per 1,000 images printed,
- ▶ amount of fluid collected from wipes before sending them to the laundry, and
- ▶ levels of solvent in water reported by POTW associated with laundering this company's press wipes.

You may be able to think of more. It is important to recognize that each “indicator” measures something different. The first one measures “input” with respect to “output.” This ratio is important because changes in use of press cleaner can be caused by fewer print runs, as well as more efficient use of the cleaner during the production process. To be sure that you are measuring success rather than simply reduced production, be sure to include output in your measurement criteria. You may also need to include more than one kind of measurement to understand the results and be able to evaluate the process.

The second measurement allows you to compare a current time period with previous time periods with respect to press cleaner use, which could help to indicate efficiencies in use, such as better work practices. Again, this comparison should not be made without reference to output over the same time period. Number three also provides a comparison among different work practice methods. Number four shows how much press cleaner is being reused and the reduction in burden on the laundry, and number five shows the success in reducing water releases at the laundry. In a sense, number five is the “acid test” of whether your goal is being met. Without success here, the achievement of the targets within your plant would be meaningless because



Experience has shown the importance of setting up measurement criteria to assess how things are going.

the original problem was the water releases from the laundry caused by the wipes. Each of the other measurements shows success in the achievement of targets that are steps toward your final goal. Also, some of these measures can be used to determine cost savings related to particular steps and to the overall goal. Most important, each measure is an important indicator of where problems may be occurring in the process.

If you use special equipment to measure environmental performance, it is important that you maintain and calibrate the equipment on a regular schedule. Again, designate a person to be responsible for this task, provide appropriate training on maintaining the equipment, and document the calibrations schedule. Worksheet 5-2 provides a sample log for calibration.

Worksheet 5-2: Calibration Log			
Indicator	Measurement Method	Equipment Used	Equipment calibrated: date/method
Contact Person:		Date Completed:	

Determining Causes of Problems

You will need to establish a method to determine the causes of failing to meet a target. In some cases, the cause might not be difficult to understand. Other times, however, the cause might not be obvious.

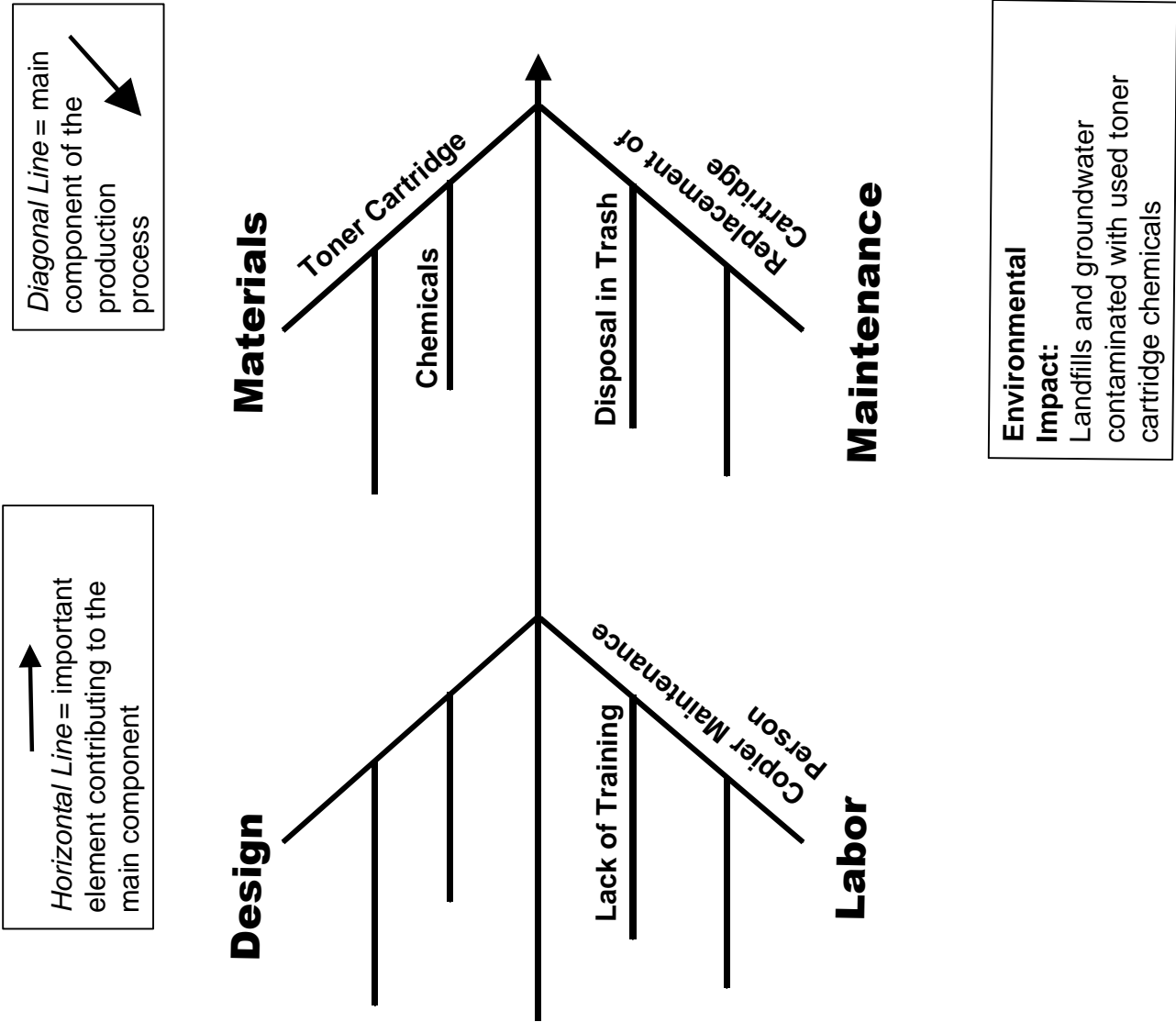
One method is called “root cause analysis.” This method can be applied here to identify causes for not meeting targets. You can also use it to determine the possible causes of a potential impact. You should determine the root cause of each of your significant aspects.

The root cause diagram, shown in Figure 5-a, will help you organize your thinking when you analyze your company's potential for environmental impact. This analysis can be done by one person or by a group, with one person writing down the ideas produced. Each diagonal line represents a main component of the production process. Your company may have different or additional components (for example, "disposal") beyond those represented here. Each horizontal line stemming from the diagonal represents an important element contributing to each of the main components. For example, elements of work practices might contribute to the labor component. This diagram is simply a device to help organize the analysis of the cause of potential environmental impacts. Use it if it helps, but don't get hung up on trying to make it work.

Tip

For more information on constructing a "Cause and Effect Diagram," go to www.sytsma.com/tqmttools.cause.html

Figure 5-a. Root Cause Diagram



The following are typical, but not necessarily obvious, causes of problems:

- ▶ poor communication,
- ▶ faulty or missing procedures,
- ▶ equipment malfunction (or lack of maintenance),
- ▶ lack of training,
- ▶ lack of understanding (of requirements), or
- ▶ failure to enforce rules.

Be sure that you have considered these possibilities in your environmental impact analysis.

Taking corrective action

Once you document a problem with respect to meeting targets, the company must be committed to resolving it. Take action as quickly as possible. First, make sure assigned responsibilities for actions and schedules are clear.

Employees in the shop may recognize the need for corrective action and provide good ideas for solving problems. Find ways to get them involved in the improvement process. It's important to determine whether a lapse is temporary or due to some flaw in the procedures or controls. For this reason, communicate any findings to employees, and provide any follow-up training for changes in the procedures that may result. The following is a checklist to help complete corrective action. Have you:

- ▶ Identified the problem(s)?
- ▶ Identified the cause(s)?
- ▶ Come up with a solution for each?
- ▶ Implemented the solution(s)?
- ▶ Documented the solution(s)?
- ▶ Communicated the solution(s)?
- ▶ Documented the action(s)?

Worksheet 5-3 is a sample Corrective Action Notice that will assist in documenting the resolution process.

Worksheet 5-3:* Corrective Action Notice	
Issue Date:	Solution Due Date:
Requested by: Issued to:	
Problem Statement:	
Most Likely Causes:	
Suggested Solutions:	
Action Taken:	
Measured Results:	
Corrective Action Closed by:	Date:
Contact for Notice:	Date completed:

*Report results on TCA-01 in the *Company Manual Template*.